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EFFECTS OF PERCEIVED ROLE AND ROLE SUCCESS ON THE DETECTION OF DECEPTION[1]

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75 college students participated in a detection of deception experiment designed to investigate conflicting results regarding the effect on the rate of detection of a preinterrogation demonstration of the polygraph's accuracy. It was hypothesized that the differences were due to differential demand characteristics in the 2 experiments The information S received between Trials I and II and S's perception of his role were the major independent variables. If Ss received information which was consonant with their perceived roles, they were detected significantly less frequently than Ss who received information not consonant with their roles. The findings conform to the "consequences theory of detection" and support the hypothesized explanation of the disparate results.

Most field situations involving the detection of deception employ a preinterrogation procedure in which the subject (*S*) is asked to draw a card at random from a pack and the interrogator then proceeds to inform the *S* as to the card he has drawn. The theory behind this practice is that, by showing *S* that he cannot deceive the interrogator, *S* will be easier to detect in subsequent interrogation. Serious doubt has been cast on this theory by the study reported by Ellson, Davis, Saltzman, and Burke (1952). In their comprehensive report on the detection of deception, they state that *S*s who are successfully detected on one trial and are so informed are *more* difficult to detect on subsequent trials.

The basic problem involved here is the effect which *S*'s knowledge of his performance in one situation will have on his subsequent performance. A *S* who has been informed that he successfully deceived on one trial will perceive the second trial quite differently from a *S* who has been told that he was unsuccessful.

A study by Gustafson and Orne (1963) has demonstrated that increasing the *S*s' motivation to deceive made them more easily detected. In the same study, three groups were tested with different information of results: one group told that they had been successfully detected on the first trial; the second group told that they had not been detected; and the third group told nothing. The results of this part of the study, while not statistically significant, strongly suggested that the highly motivated *S*s who are informed that they have successfully deceived the *E* will be more difficult to detect on subsequent trials, while those *S*s who are told nothing or who are told that they had been detected show no change in detectability.

While the differences between the results of this study and those obtained by Ellson et al. (1952) might be attributed to the high motivation of the *S*s in the former (the motivation of the *S*s in the Ellson et al. [1952] report is not known), there are other variables to be considered. Specifically, it is necessary to consider not only the degree of motivation displayed by the *S*s, but also the direction of motivation—the goals of the behavior as perceived by the *S*s. For example, in the study by the authors which was described above, the *S*s were told that individuals with great emotional control and superior intelligence were able to deceive successfully. These instructions proved highly motivating to the college population from which the *S*s were drawn. If the *S* is told

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at he successfully deceived *E* on the first al, he can assume that he possesses the de- ed traits. If he is told that he was detected the first trial, he can interpret this to an that he is not outstanding on these its According to the consequences theory the detection of deception (Gustafson & rne, 1963), it would be predicted that the who has successfully deceived on the first al would be less concerned about the second al—the consequences of deceiving would less important to him, he would be less ivated and, therefore, more difficult to ect. In the other cases, the already high ivation-to-deceive would not likely change the second trial.

An alternative situation can easily be im- ined. Without specific instructions, the *S* ght well perceive the purpose of the experi- ent to establish the effectiveness of lie de- tion. He might further assume that "a rmal *S*" can readily be detected by the quipment used. If the *S* makes these assump- ons and he is told that he was *not* detected the first trial, that he successfully deceived e *E*, then he would of necessity conclude at his responses had been different from at of the "normal *S*." As a result, he would more concerned on the second trial. The cond trial would be more important to m, and the consequences theory of detec- on would predict that he would, therefore, more easily detected on the second trial. onversely, if the *S* perceives the experiment the manner outlined and if the *S* is told at he has been detected on the first trial, hat is, responded in the manner of "normal s," the second trial would be of less im- ortance to him and therefore he would be ore difficult to detect.

Thus, the manner in which the *S* perceives he experimental lie detection situation would ead to opposite results. The *S*'s perception f the experimental situation is a variable hich is necessarily present in all experi- ental situations. Orne (1962) elsewhere has ermed the sum total of cues which deter- ine the *S*'s perception of the purpose of he experiment as the "demand characteris- ics of an experimental situation." The type f cues which may be involved include ex- plicit and implicit instructions, the experi- mental setting, the experimental procedure itself, subtle behaviors of the *E* (as well as the ancillary personnel), etc., as they are *interpreted* in the light of *S*'s past knowledge and experience. Any experimental situation will have demand characteristics (i.e., necessarily most *Ss* form some hypothesis about what they are doing and why) which may be significant factors in the interpretation of the experimental findings.

Subtle differences in demand characteristics could have existed between the experiment of Ellson et al. (1952) and our original pilot studies. In these pilot studies, *Ss* were motivated to deceive, whereas in the Ellson et al. studies no specific preexperimental instructions were given. However, many *Ss* come to the experiment with the conviction that normal individuals cannot fool the lie detector and that only individuals who lack strong conscience and who have some kind of criminal tendencies are able to lie successfully. It seems plausible that these preconceptions were present in the population from which the Ellson et al sample was drawn. Unless specific instructions are given to the contrary, this type of preconception might well cause the *S* to perceive the experiment in the alternative way discussed above. It should be clear that problems of experimenter bias are not being considered here, rather the possibility that *Ss* in the two experiments perceived the purposes in two alternative fashions. In the light of the consequences theory of deception, the interaction between these different sets of *Ss*' perceptions (demand characteristics) with the experimental variable would lead to opposite results.

The present experiment was designed to test whether differences in the *S*'s perceptions *explicitly created by instructions* similar to those which could have been introduced by *implicit* differences in the experimental situation would yield opposite findings even though otherwise the identical set of experimental variables were employed. The major independent variables were: (*a*) the *S*'s perception of his role in the experiment, and (*b*) the information he received as to his success on the first trial. The primary dependent variable was his detectability in the second trial of the experiment. In keeping

with a widely used method for categorizing the direction of human motivation, one group of *Ss* was designated as "need deceive" (n Deceive) and the second group as "need detected" (n Detected).[3]

It was predicted that:

1. *Ss* who perceive their task to be the successful deception of *E* (n Deceive) and are told that they have indeed been successful in deception will be detected less frequently on the next trial than *Ss* with the same perception who are told that they have been detected.

2. *Ss* who perceive their task to be that of being detected by *E* (n Detected) and are told that they were indeed detected on the first trial will be detected less frequently on the next trial than *Ss* with the same perception who are told that they had not been detected.

3. *Ss* in the n Deceive and the n Detected groups who are given the same information as to whether they were detected or not will be detected on the next trial at significantly different rates.

METHOD

Subjects. Seventy-five male undergraduates were recruited from local school employment offices and paid for their participation Many *Ss* had participated in psychological experiments, but none had previously taken part in detection of deception experiments

Procedures The *Ss* were randomly divided into two groups n Deceive and n Detected. Each major group was divided further into two subgroups according to the information given the *S* between Trial I and Trial II In subgroup one, the *S* was informed that he had successfully deceived *E,* while in the second subgroup the *S* was told that he had been detected

A tape recording was played to each *S* at the beginning of the experiment The tape included information designed either to motivate *S* to deceive or to motivate him to be detected, according to which of the two major groups *S* belonged, and procedural instructions which were to be followed "for the duration of the experiment" These instructions were identical for both the n Deceive and n Detected groups and were the same as those used in an earlier study (Gustafson & Orne, in press). Those *Ss* in the two n Detected groups heard the following:

Thank you for participating in our resear Just a few words about the experiment in whi you are about to take part. This study is signed to see whether or not you can withh information from equipment which is based on principle similar to that of the lie detector course, the equipment which we are using is good deal more sophisticated than that which usually used as a lie detector device. I am su that you know that these devices have not been fully recognized by the courts, primarily cause the circumstances under which they wo and the mechanisms which make them work a not yet fully understood. However, certain fa are known based in good part on our own r search as well as that of others. We know th individuals who are normal and well-adj find it extremely difficult and even impossible prevent themselves from giving certain physi logical reactions when they lie This is larg due, or so it seems, to certain childhood exper ences which seem to have caused a kind of con ditioned involuntary autonomic response assoc ated with lying The machine does nothing mo than record this response making it possible recognize a lie Of course this only works wit normal individuals, individuals who have so called psychopathic tendencies, who are able to l without any feeling of guilt, or who are mentall disturbed, do not appear to show these kinds changes associated with lying

In this study we are interested in your at tempting to prevent yourself from showing th response to lying We realize that this is extremel difficult for normal individuals, however, we wan you to try. Presently the rules of the experimen will be explained to you You are to follow them as carefully as you can Your job is to try t show no response whenever you can.

Good luck!

The two n Deceive groups listened to a tape which was similar to the one used in our preliminary study cited in the introduction (Gustafson & Orne, 1963)

We would like to thank you for participating in our research Just a few words about the experiment in which you are about to take part This study is designed to see whether or not you can withhold information from equipment which is based on a principle similar to the lie detector Of course the equipment we are using is a good deal more sophisticated than the usual kind of lie detection device I am sure that you know that these devices have not yet been fully recognized by the courts largely because there is some question about their validity These tests are designed to see whether or not an individual who really wants to is able to withhold information from the machine; in other words, when certain significant things are said whether you can suppress your autonomic, your involuntary bodily reaction to them Some few people are able to do this However, I should tell you that it is rather difficult. We have found that these are individuals

[3] These do not refer to components of Murray's theoretical system

...ho have more than the usual amount of con-...ol, who are quite superior in intelligence

I should tell you that in this experiment you ...hould try your level best to withhold informa-...on from the machine As I say, while it is very ...ifficult to do this, it is possible Now the rules ... the experiment will be explained to you.

Good luck!

Transducers for recording skin resistance, heart ... and respiration were then attached The ...thod for recording skin resistance was that used previously reported research (Gustafson & Orne, ...). (The other measures were included only for ...oratory purposes and will not be discussed ...ther.)

Each *S* drew a card from a seven-card deck which ...isted of two blank cards and five cards, each of ...ch had a different two-digit number printed on The decks had been arranged in such a manner ...t *E* could identify the card which *S* selected by position in the deck. Although this procedure is usual in detection of deception studies, it was ...lowed because it was necessary for *E* to be able present *S* with the information appropriate to his ...group without regard to his performance on ...al I

Because only *S*s who drew number cards on both ...als could be used in testing the hypotheses, the ...nk cards were arranged so that they were always either the first or second position at the front ...d the back of the deck Observations from earlier ...dies indicate that *S*s draw cards from near the ...ddle of the deck much more frequently than they ... from the extremes. Thus, only a few *S*s were lost ...cause they drew blank cards

Each *S* was instructed to write the number on ...other card 10 times while *E* was out of the room ...d to write zeros if he drew a blank card This ...as done to insure that *S* had actually looked at ...e card. Both cards were turned over by the *S* ...fore the *E* returned. Prior to each trial, the *E* ...minded *S* to respond verbally with "no" to each ...mber presented to him during the interrogation

The deception task was based upon what the ...esent authors have designated as the "guilty-per-... paradigm" (Gustafson & Orne, in press) In this ...sign, *S*'s task is to appear as though he has drawn ... blank card and, therefore, has no "special" infor-...ation concerning any of the numbers This model ... contrasted to the "guilty-information paradigm" ... which *S* may deceive *E* by forcing a response to ... noncritical item (Gustafson & Orne, in press). The ...k of all *S*s in this experiment, therefore, was to ...ppress responses to all numbers and thus try to ...ppear innocent. Of course, in the case where *S* had ...awn a blank card, there was no deception in-...olved.

The numbers were presented in a manner similar ... the relevant-irrelevant method used in commer-...al lie detection (Inbau & Reid, 1953; Lee 1953). ...he five numbers were presented in random order ... *S* by a tape-recorded voice, one number every 15 ...conds. The first number on the tape was a dummy so that the inordinately large GSR response which usually appears on the first stimulus presentation could be discarded Recordings were made on an Offner Type R Dynograph at a paper speed of 2.5 millimeters per second. After a stable resting GSR had been obtained, the tape-recorded interrogation was played to *S*.

At the conclusion of Trial I, *E* re-entered the subject room and presented the *S* with the information appropriate to his subgroup. One-half of the *S*s were told that they must have drawn blank cards (though they had not) and thus were made to feel that they had successfully deceived *E*, while the other half were informed of the number and were asked to verify that *E* had, in fact, correctly detected them

The *S* was then asked to draw a card from a second deck The procedure followed during Trial II was identical to Trial I except the interrogation tape was made to correspond to the numbers in the second deck. These numbers did not duplicate any of the numbers in the first deck

Analysis of the data The analysis was performed by individuals who did not know what the critical numbers were and who were unaware of the authors' hypotheses concerning the experiment Of the 75 *S*s who took part in the experiment, 11 were discarded because, by chance, they happened to have chosen a blank card on either Trial I or Trial II, or because they did not follow instructions

The average GSR response to each of the five numbers was determined The largest mean response was ranked as one, the second largest as two, etc If the number which *S* drew was given a rank of one, *S* was considered to have been detected If the rank assigned was not one, *S* was considered to have deceived *E* Chi-square tests were used to compare the number of successful and unsuccessful detections between different conditions Trial I and Trial II were treated individually in the analysis

RESULTS

While the outcome of Trial I was not a principal concern of this study, it was important to determine whether there were any systematic differences between the subgroups prior to the introduction of the treatments presented at the conclusion of Trial I. The number of successful and unsuccessful detections on Trial I for the n Deceive and n Detected groups are presented in Table 1 according to the kind of information *S* received between Trials I and II. There were no significant differences.

Prediction 1. The *S*s of the n Deceive group who were told that they had successfully deceived *E* (on Trial I) were detected significantly less often on Trial II than n Deceive *S*s who were told they had been detected.

TABLE 1

NUMBER OF SUCCESSFUL AND UNSUCCESSFUL DETECTIONS ON TRIAL I FOR THE TWO SUBGROUPS OF THE N DETECTED AND N DECEIVE GROUPS

Group	Told detected	Told not detected	χ^2 between Columns 1 and 2
"Need to be Detected"			
Detected	9	13	$\chi^2 = 1.31$
Not detected	7	3	*ns*
"Need to Deceive"			
Detected	13	11	$\chi^2 = 0.17$
Not detected	3	5	*ns*
χ^2 between n Detected and n Deceive groups	$\chi^2 = 1.31$ *ns*	$\chi^2 = 0.17$ *ns*	

Note.—Note that Ss were not given information about the success of detection until *after* the trial on which these data are ba[sed]. A multiple chi-square contingency analysis (Sutcliffe, 1957) was used to analyze the departures from expected frequencies in the entire Table. Neither the chi-square components for each variable alone, nor the interaction between variables, were significant

Prediction 2. The *Ss* of the n Detected group who were told that they were unsuccessful in deceiving *E* were detected significantly less often on Trial II than n Detected *Ss* who were told they had not been detected (see Table 2).

Prediction 3. The *Ss* in the n Deceive and n Detected groups who were given the same information with regard to their success or failure at deceiving on Trial I were detected at significantly different rates on Trial II (see Table 2).

On Trial II, it is interesting to note that the *Ss* in the two groups with low-detection rates showed markedly different overall response patterns. Often a very flat GSR record was obtained. Frequently *Ss* responded only to the first number (which was a dummy and not included in the analysis). This led to a number of ties when the average responses were ranked. The GSR records were similar to those of the unmotivated group in a study reported earlier (Gustafson & Orne, 1963).

DISCUSSION

The results support the hypothesis that the demand characteristics (*S*'s perception of the purpose of the experiment) significantly affect the rate of detection. The principal

TABLE 2

NUMBER OF SUCCESSFUL AND UNSUCCESSFUL DETECTIONS ON TRIAL II FOR THE TWO SUBGROUPS OF THE N DETECTED AND N DECEIVE GROUPS

Group	Told detected	Told not detected	χ^2 between Columns 1 and 2
"Need to be Detected"			
Detected	4	14	$\chi^2 = 10.28$
Not detected	12	2	$p < .005$
"Need to Deceive"			
Detected	15	3	$\chi^2 = 15.36$
Not detected	1	13	$p < .001$
χ^2 between n Detected and n Deceive groups	$\chi^2 = 12.96$ $p < .001$	$\chi^2 = 12.55$ $p < .001$	

Note.—A multiple chi-square contingency analysis here shows that neither information given, nor motivation (*n* Detect versus *n* Deceive) have significant effects by themselves. The relevant chi-square values, calculated from partitioned subtables, are 0.2[1] ($p > .95$) and 0.00, respectively ($df = 1$). However, successful detection does depend significantly on the interaction between information and motivation, ($\chi^2 = 30.94$, $p < .001$, $df = 1$).

ding is that subtle motivational variables ect what has often been assumed to be a atively mechanical procedure. When *S* pers his role to be one in which he will be ected and yet is told that he has successly deceived *E*, he becomes relatively easy detect. Similarly, if *S* is motivated to de-ve and yet is told that he has been de-ted, he also becomes relatively easy to ect. More generally, if *S* is given informan indicating to him that he is not perming in a manner consonant with his role, is more easily detected than if he is given rmation indicating that he is behaving in cordance with his role.

The results indicate that the differences tween detection rates on Trial II are not e to differences in *S*s prior to the experiental manipulation which occurred between ials I and II. It should be remembered, wever, that *E* knew the composition of the oups beforehand and could conceivably ve communicated cues to *S* during or after e experimental treatment. Indeed, one may legitimately concerned with the problems bias in these results if, as has been demonrated, subtle factors affect the rate of dection.

Previous research (Rosenthal, 1963) has dicated that *E* is by no means neutral to e outcome of his study. Only one *E* (LAG) ok part in the running of *S*s. Because of his eoretical frame of reference, he had a conderable investment in the attainment of the pected outcome of the study. It is possible, erefore, that in his interaction with the *S*, *E* btly communicated his expectations. In the ght of the consequences theory of decepon, however, any *S* who became aware of s wish that he not be detected should, in ect, be detected more easily. In other words, y subtle communication of *E*'s expectations *S* might well have militated against the pothesis. Furthermore, in a previous exeriment the same *E* had confidently expected replicate the findings of Ellson et al. 1952) and was surprised when contrary reults were obtained. The findings may thus e ascribed to the differential affect in motiation introduced by the tape recordings ather than to artifact or bias introduced by E. Nonetheless it would seem desirable to replicate these findings with *E* unaware as to which group *S* belongs.

These results support the view that the detection of deception is a subtle phenomenon in which psychological variables play a crucial role. The study appears particularly relevant since the conclusion which might have been drawn on the basis of the work of Ellson et al. (1952) would be that the standard technique as used in the field should be revised, that is, that the proof given to *S* of the polygraph's effectiveness would decrease rather than increase its subsequent utility. This conclusion is not justified, however, since the psychological parameters of the field situation correspond to the n Deceive group. In this situation, proof of successful detection maximizes subsequent detection.

It is assumed that the study conducted by Ellson et al., where motivation is not specified, corresponds to the n Detected group, suggesting that the psychological setting in which an experiment is performed may interact in a crucial fashion with experimental variables.

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